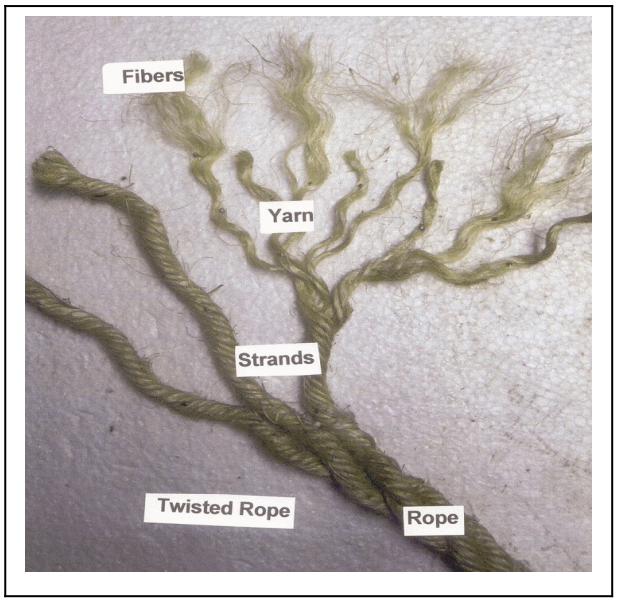
A GUIDE FOR SCOUT LEADERS ABOUT ROPE and KNOTS

Hightower Trail District
Atlanta Area Council

Boy Scouts of America

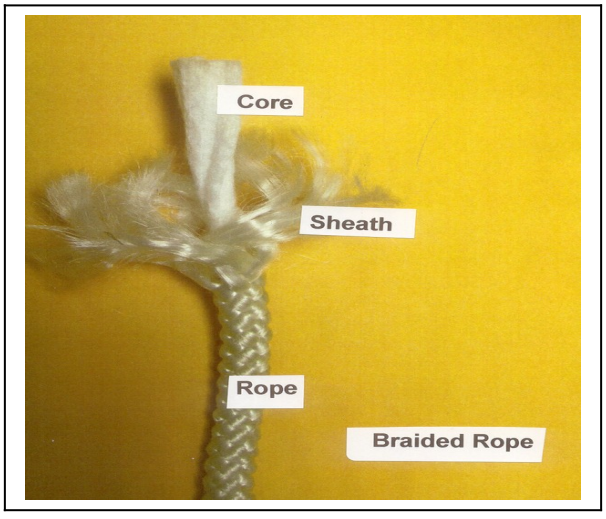
Background

Rope predates the wheel as man's first invention, and continues to serve in many of today's daily activities. Rope is essential for many outdoor activities. Rope and knot are two words that go hand in hand, one is useless without the other.



Natural fiber ropes are made by twisting fibers in opposite directions to create yarn. Multiple yarns are twisted to create strands. Classic rope is made of three twisted strands

Ropes made of natural fibers, include hemp or manila for strong rope; cotton fibers were the choice for manageability and sisal for economy. Natural fiber ropes have high tensile strength, resistance to wear and atmospheric agents. Natural fiber ropes are heavy (especially when wet), not very elastic and will rot if not stored carefully.



Twisted ropes are also made of synthetic materials, such as polyethylene, polypropylene or polyester. These materials are shiny, non-absorbent, do not rot and have low melting points. The strength of these materials is high; but are more difficult to work. Some knots tied of these synthetic materials do not hold well.

Another method to make rope is to braid strands to form a sheath around an inner core that is also braided. Braided rope is softer. After pre-stretching, braided rope does not stretch any further.

Ropes untwist and become useless unless each end is finished. Temporarily taped, each end of natural fiber ropes should later be whipped, or back-spliced. Synthetic

rope ends are best heat-fused. Be sure not to touch the hot ends until completely cooled. Severe burns can occur.

Learning to tie knots

Webelos and new Scouts are required to learn and demonstrate their knowledge about specific knots. Learning to tie knots is fun, especially if another Scout can explain, demonstrate, guide, and empower the learning Scout. Once learned, tying knots and hitches must be practiced. A knot board having ropes of differing sizes, materials, and lengths offers a good practice experience.

A knot-practice board

Useful points to remember

- A knot uniting two ropes reduces the strength of the unit to about half of that of the weaker rope.
- A rope that is twice the diameter of another has four times its strength.
- Never use two ropes of different materials together, as only the more rigid rope will work under the strain.
- Repair fraying ends immediately; apart from looking untidy, they quickly consume yards and yards of rope.
- Always dry a rope before coiling it down.
- Never buy a rope that is too stiff. It will not become more-supple with time.
- Knots should be easy to tie.

- Knots should stay tied.
- Knots should be easy to untie.
- Knot tying is not a ‘speed contest’, unless it is used as a first aid measure. Tying it right is more important.

Teach yourself

Time:
This will vary from person to person, However, it is probably advisable to have a go at two or three at a time in short sessions of 15-30 minutes rather than trying to tackle them all at once.

Equipment:
You will need a couple of lengths of rope about 3 feet long and of differing colors. This will help you see the knot as it forms. You will also need a free-standing pole or conventional wooden chair back, or even a table leg for tyig some knots to!

Learning all about it:
The only way to learn how to tie knots is to practice. Have a go a tying a number of knots. If you are stuck on one, don’t worry, move on toy another. Once you have mastered one type, you may find the others easier.

Follow these steps when learning to tie a knot from a drawing:
- Look at the drawing and trace the various twists, crosses and bends with your eye, from the standing part of the working end, to see how the know is constructed.
- Now lay your rope on a flat surface and take hold of a point about 10 inches from the working end.
- Make the first bend, turn or crossover in the rope and then move along to the next.
- Look at the diagrams of knots and compare your work with them.
- Try each knot using the diagram a few times and then try it from memory. Try again a couple of days later. When you can tie the knot three times in a row, you will have it right.

Hints and tips:
- Keep the knot flat and the hands open as you tie the knot.
- If the knot involves two working ends, work them together from t he standing parts to the working ends.

- Check the shape of the knot at each state.
- Make sure you tighten the knot correctly so that it does not form the wrong shape at the last minute
- With experience you will find that many knots are made up of combinations of simple knots. Tying more complex ones is just a matter if tying a series of simple ones!

Teach others

Knowing which know is appropriate for a specific need, is just as important as knowing how to tie it. Be sure to identify some situations that call for the knot that you will be teaching.

Time:
Knotting can be taught in a number of short (15 – 30 minute) sessions; however it is important that no more than two or three knots are taught at one time. Some people pick up knots very quickly, others take much longer. Remind the person that plenty of practice is required to retain what they have learned. At a later date, ask the person to demonstrate the knot to you.

Equipment:
Lengths of different colored rope, each approximately three feet long. Samples of ropes made with differing materials and different sizes and thicknesses. A selection of short rods, rails or conventional wooden chars (use the (backs for hitches). A thicker rod, or short log (for the timber hitch) and a triangular bandages (for the square knot).

Training methods
Knotting is obviously a practical subject and no amount of theory will ever allow people to learn knotting, so it is important to get on with the practical work as soon as possible. It may be appropriate to outline a few general facts first, for example, the parts of a rope, different types of rope and all knots have a purpose and so on. This can be done with all participants together before working in, perhaps small groups or pairs, then individually.

It is important to follow instruction with further practice and experience. This can be in the form of questions, quizzes, games or “incidents’ that require participants to recall what they have learned.

General points:
Whenever possible, knots are best and most interestingly taught when being used for their real purpose.

People learn a different rates. Therefore, ideally, there should be one instructor to one or tow participants. **The participants should sit beside the instruction, not in front of him/her**. The instructor should go through each stage of the k now slowly, with the participants copying.

Once a participant has followed the instructor twice, ask them to try it on their own. The instructor should then compare it with the correct one to see if there are any errors which need to be corrected.

Participants should be given the opportunity to practice the knots on their own time. Games and activities will provide further opportunities for practice and feedback.

Using the teaching EDGE™ with knots

The teaching EDGE is a teaching method developed by the Boy Scouts.

When teaching knots, it works like this….

- **Explain**: Explain how to tie the knot before you start working with the rope. This allows the person you are teaching to concentrate on what you are saying without the distraction of trying to simultaneously follow what your hands are doing

- **Demonstrate**: Not it is time to get out the rope(s) and show how to tie the knot. Explain a gain as you tie the knot. Try to use the same words you did the first time you explained what you were going to do.

- **Guide**: Let the person you are teaching tile the knot themselves. Watch closely and guide them to success

- **Enable**: Continue to guide the person until they can tie the knot themselves. Step back, but be available until you are sure they are on their way.

Types of "knots"

There are literally thousands of knots, some have specific functions, and others are strictly decorative. Knowing the need will determine which 'knot' should be used. These basic knots are divided into three groups:

- Knots are used to tie two ropes together
- Hitches are used to tie a rope to an object
- Lashings are used to join spars together.

Tying the right knot at the right time will make your outdoor adventure safer and easier. Someday a knot you tie may save a life

Reference Sources

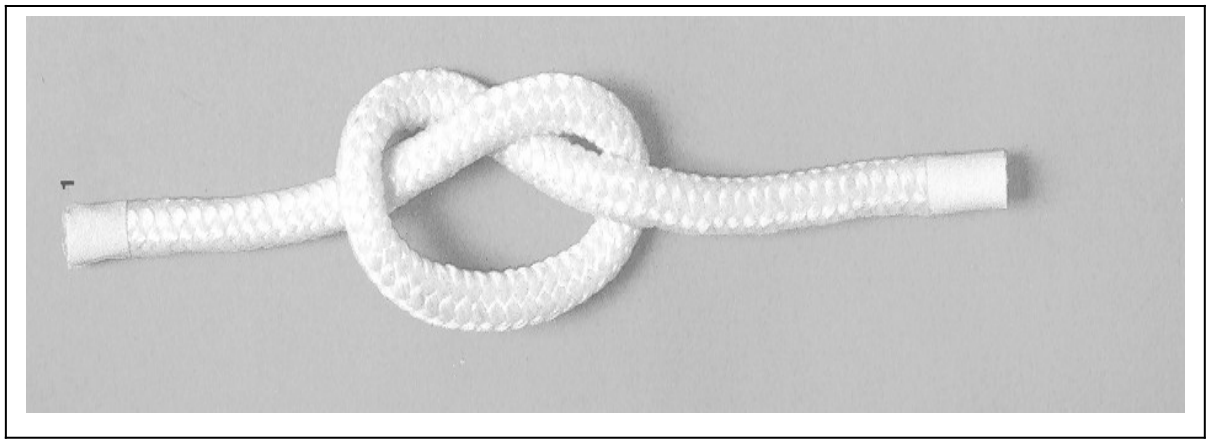
BSA Field Book, 1967;
The Boy Scout Handbook, 1955;
The Morrow Guide to Knots, 1981

Look at knots and ropes in Internet Explorer. One of the best is animatedknots.com

The Overhand Knot

Purpose:
The overhand knot is one of the oldest knots used to form a ‘stop” at the end of a rope. It also is the basis of countless other knots such as the Figure 8 Knot.

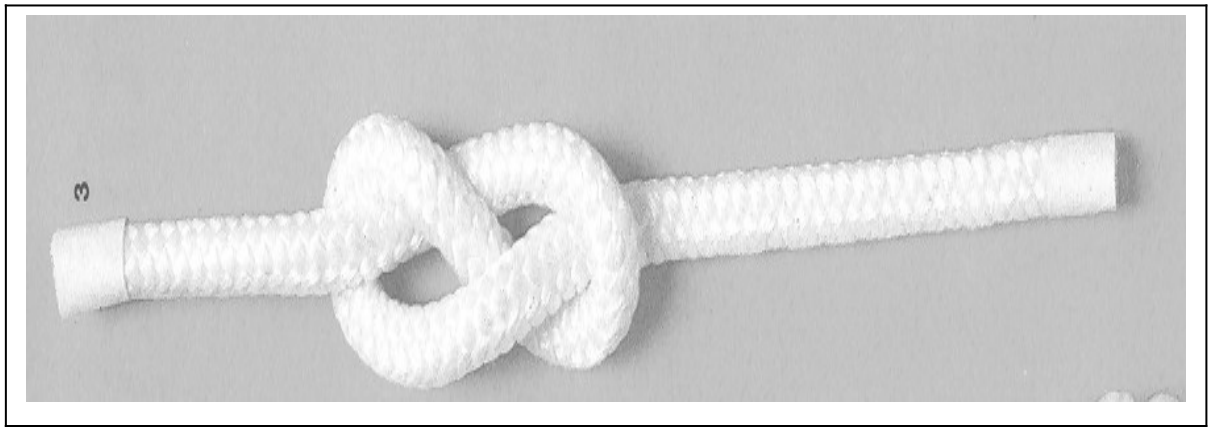
Picture:



The Figure 8 Knot

Purpose:
The Figure 8 Knot is used to form a larger head at the end of the rope, to prevent its slipping through a hole.

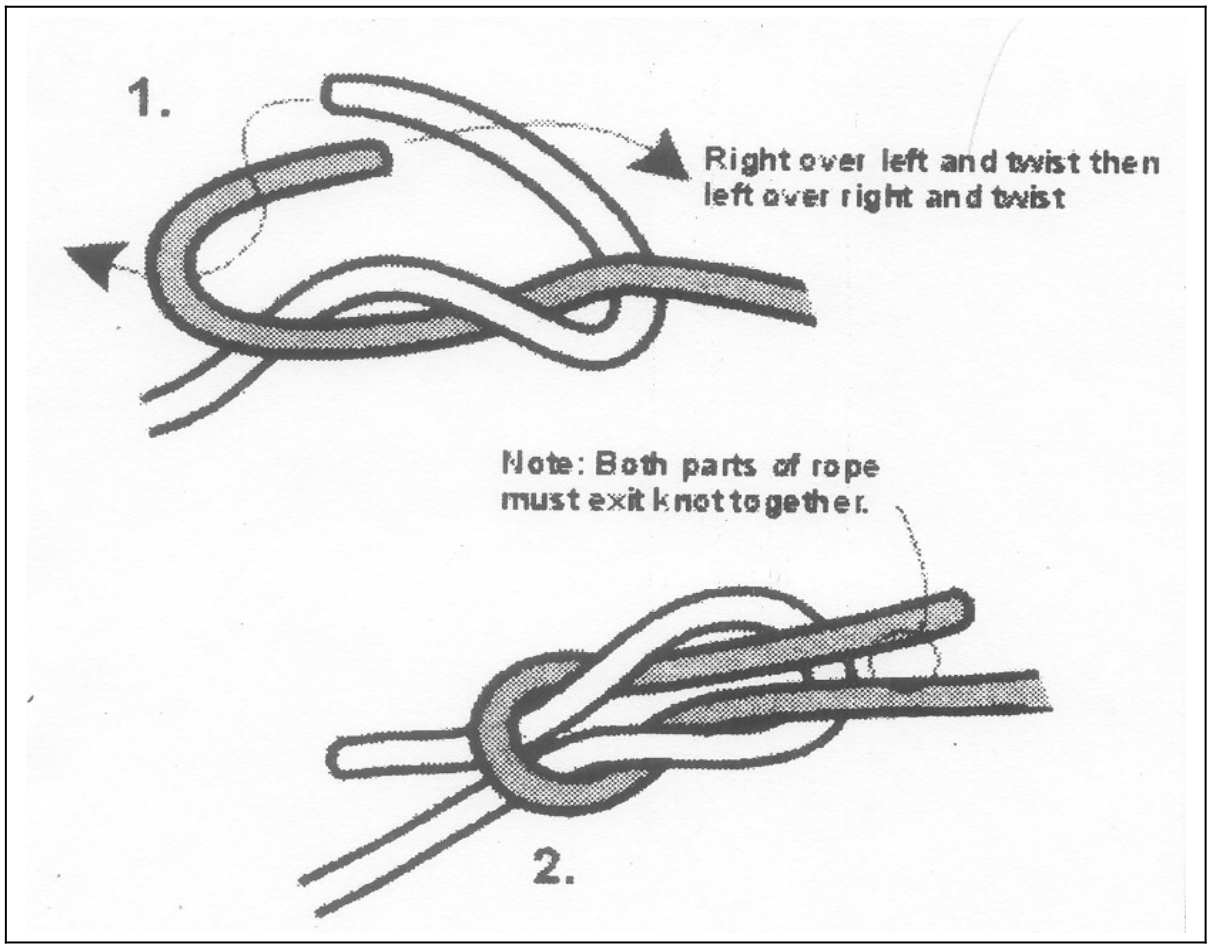
Picture:



The Square Knot

Purpose:
The square knot is used to tie two ropes (of equal diameter) together. It is called the square knot because it seems to have four sides. A common use is for tying packages or first aid bandages. It is also called the reef knot as sailors use it to secure reefed sails. This knot may be difficult to untie if it has been under strain. The square knot is not a secure knot, and has been known to slip. The square knot begins with a simple overhand knot.

Picture:



Note:

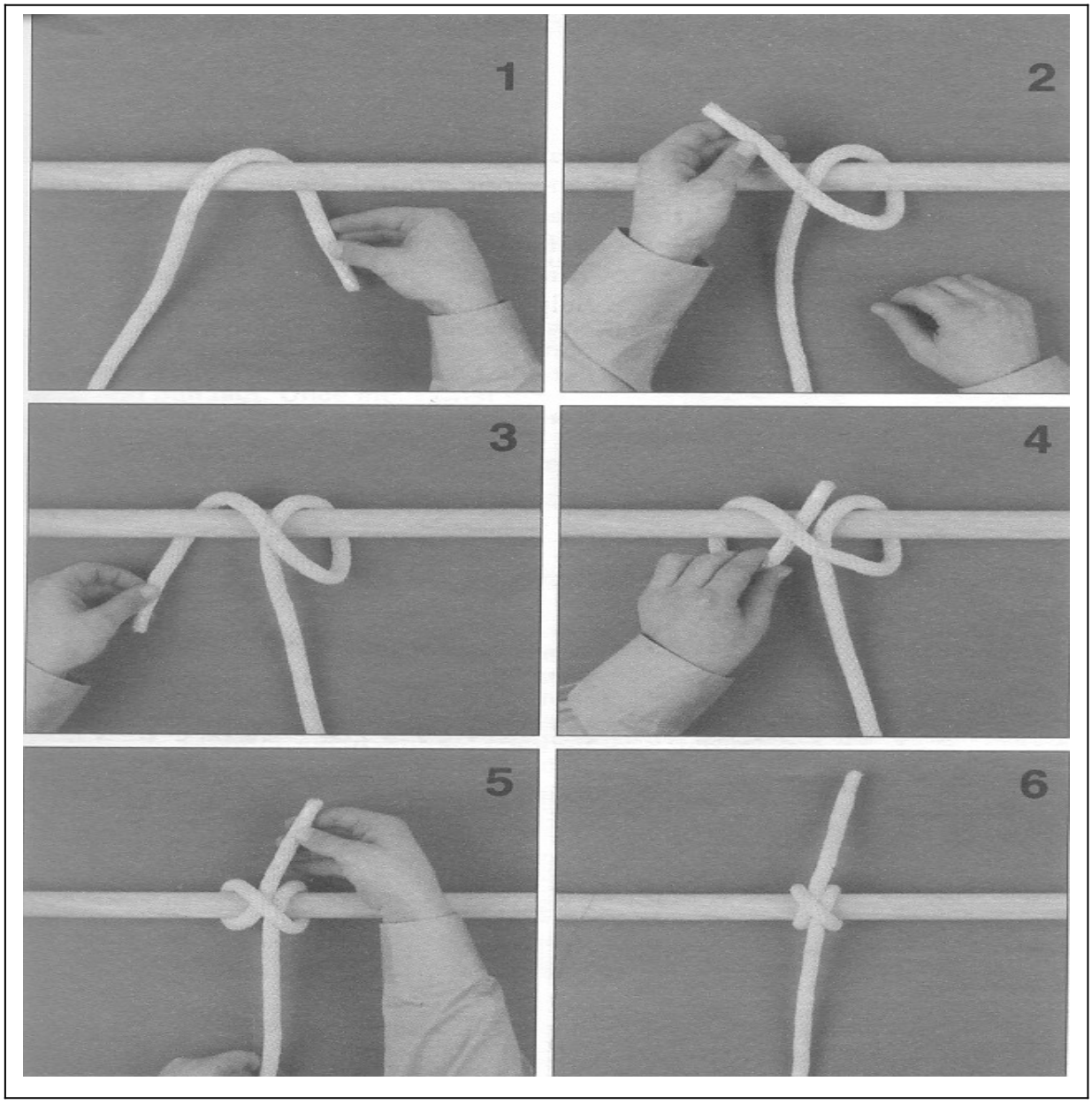
1. Both white ropes exit from one side and both shaded ropes exit from the other side

2. Both ‘short’ ends exit on the top, and the ‘standing part’ of the ropes exits on the bottom.

The Clove Hitch

Purpose:
The clove hitch is used to attach a rope to an object such as a post. It is also the most commonly used knot as the beginning if lashings, or around your bag of food to be hung in a tree. It is an easy hitch to tie.

Picture:

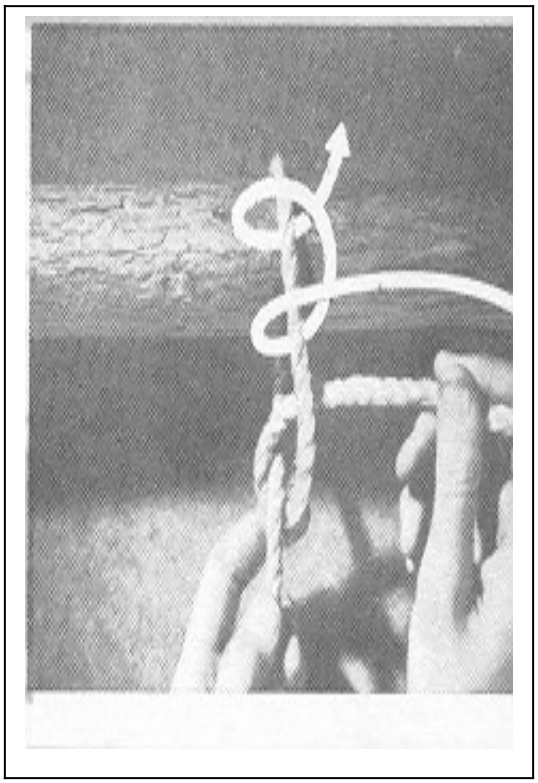


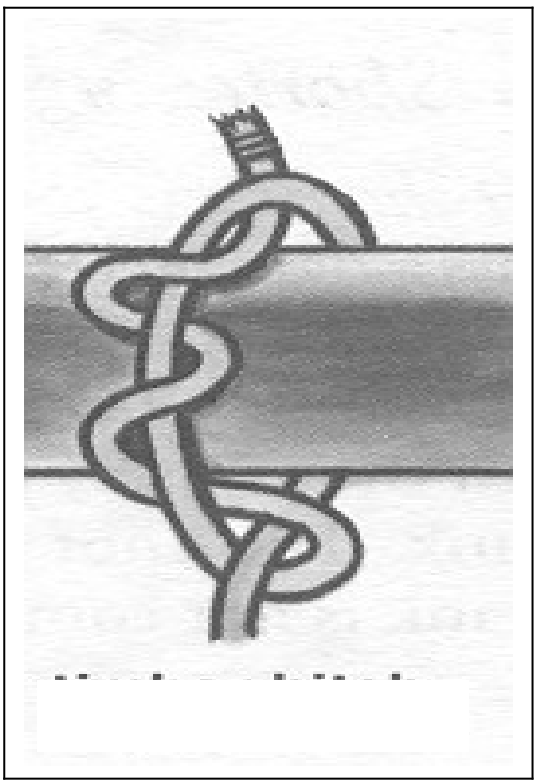
Note: The formation of an “X” as you make the second pass.

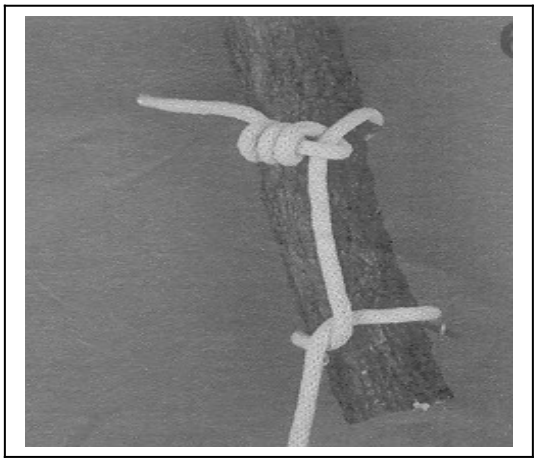
The Timber Hitch

Purpose:
The timber hitch is another pioneering knot, used to begin many lashings. It is also good for lifting logs or dragging heavy objects over the ground. It is a very easy hitch to tie and untie.

Picture:







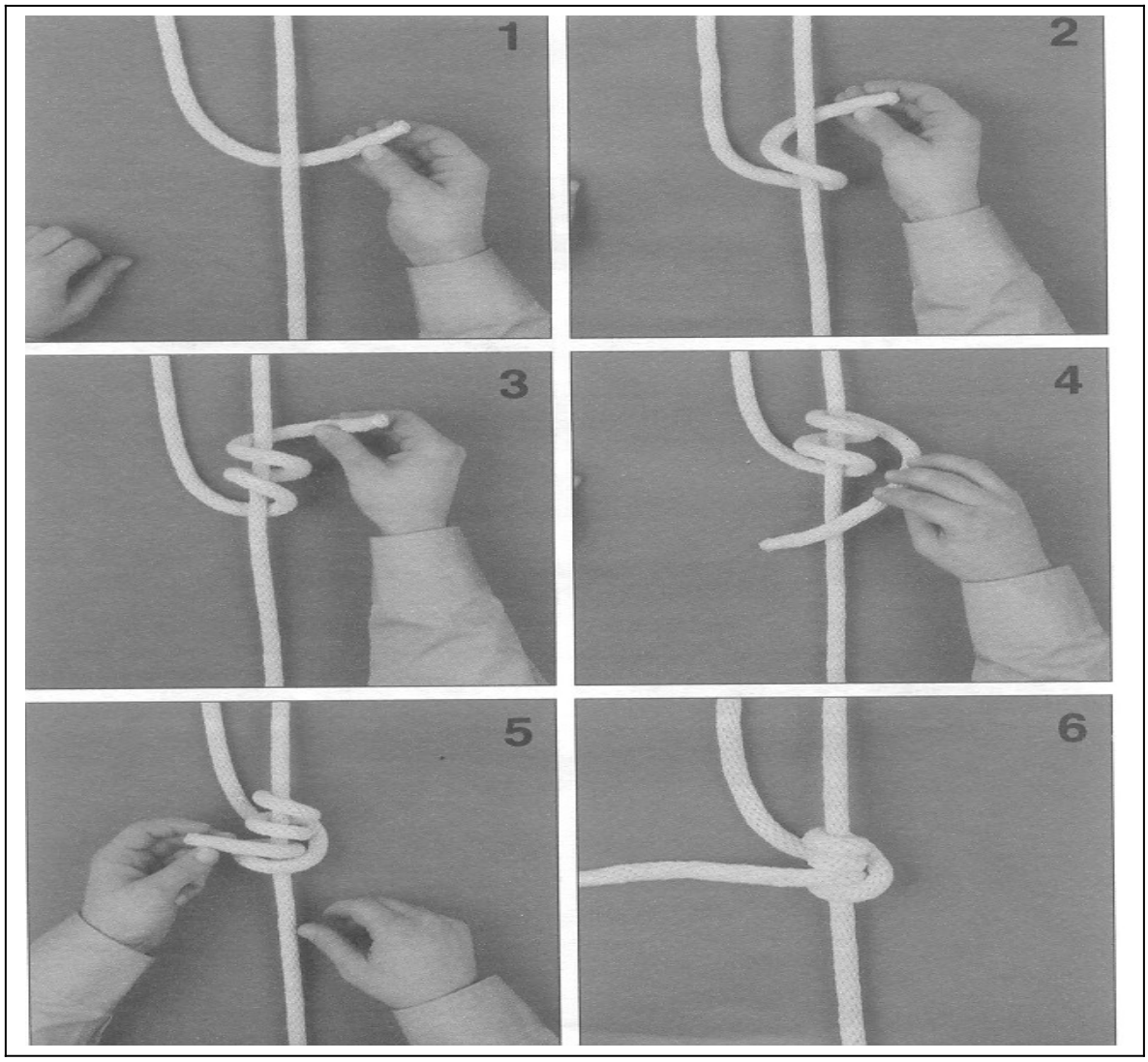
Note:

When dragging a log, throw another half-hitch around the log closer to the pulling end.

The Taut Line Hitch

Purpose:
The taut line hitch is an ‘adjustable’ hitch, on a line that is ‘tight’ such as a tent guyline. When rain comes, and the tent fabric shrinks, the camper can relieve the strain by sliding the hitch up or down the standing part of the rope.

Picture:



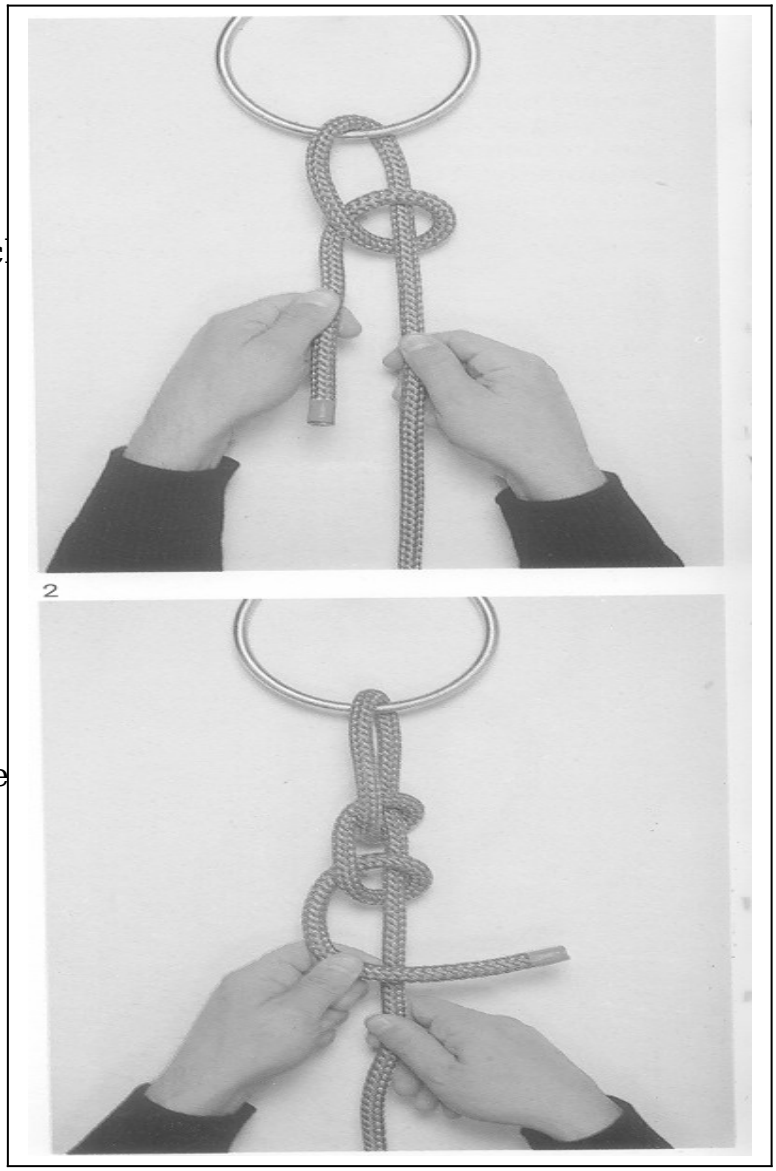
Note: Observe two wraps around the standing part within the loop before crossing over the top and finishing off with another half-hitch.

Half-Hitches

Purpose:
These are temporary hitches used to tie a rope to a post. It is not intended to hold against a large strain. They are companion hitches used with other knots to make them stronger.

Picture:

Single half hitch



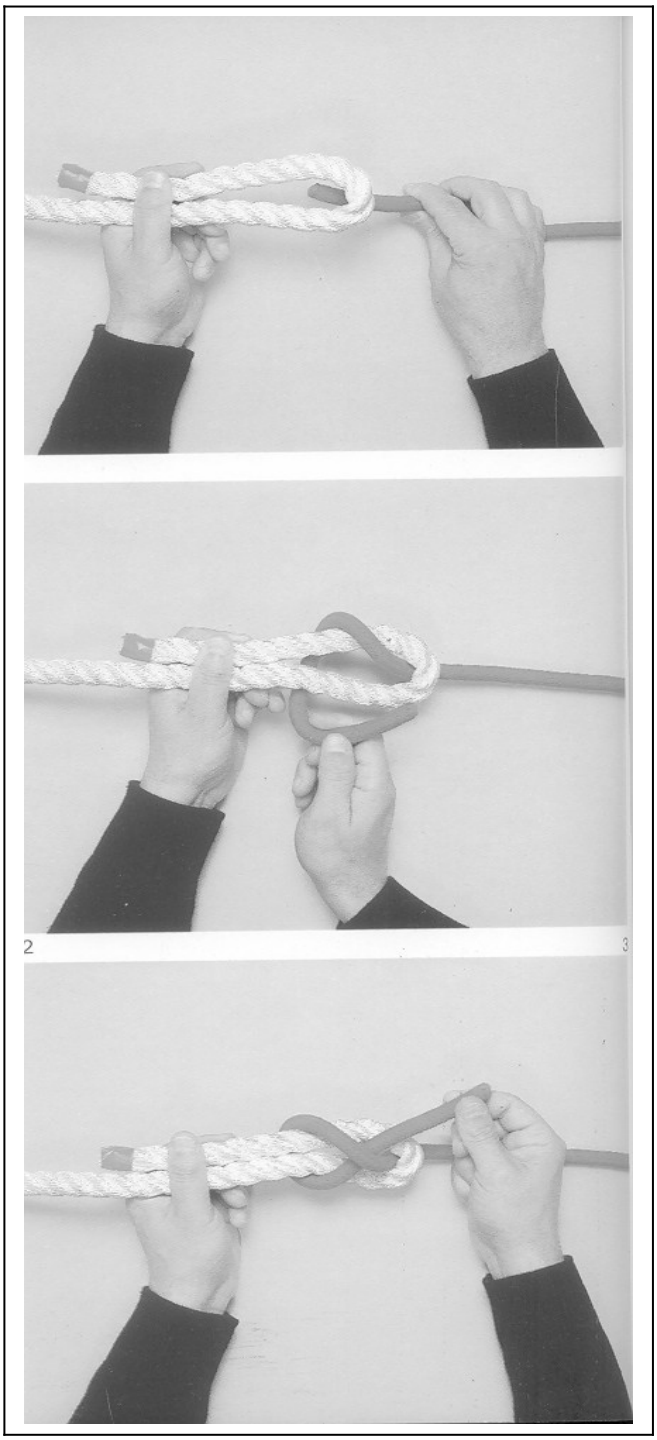
Two half hitches

Note: The single half hitch looks like an overhand knot; and the two half hitches looks like a clove hitch on itself.

The Sheet Bend

Purpose:
The sheet bend is the “knot of choice” when the objective is to join two ropes having different diameters.. The larger rope forms the ‘bight’. Tighten this knot by pulling on the standing end of the smaller rope. The sheet bend becomes stronger with increasing strain; but is easy to untie.

Picture:



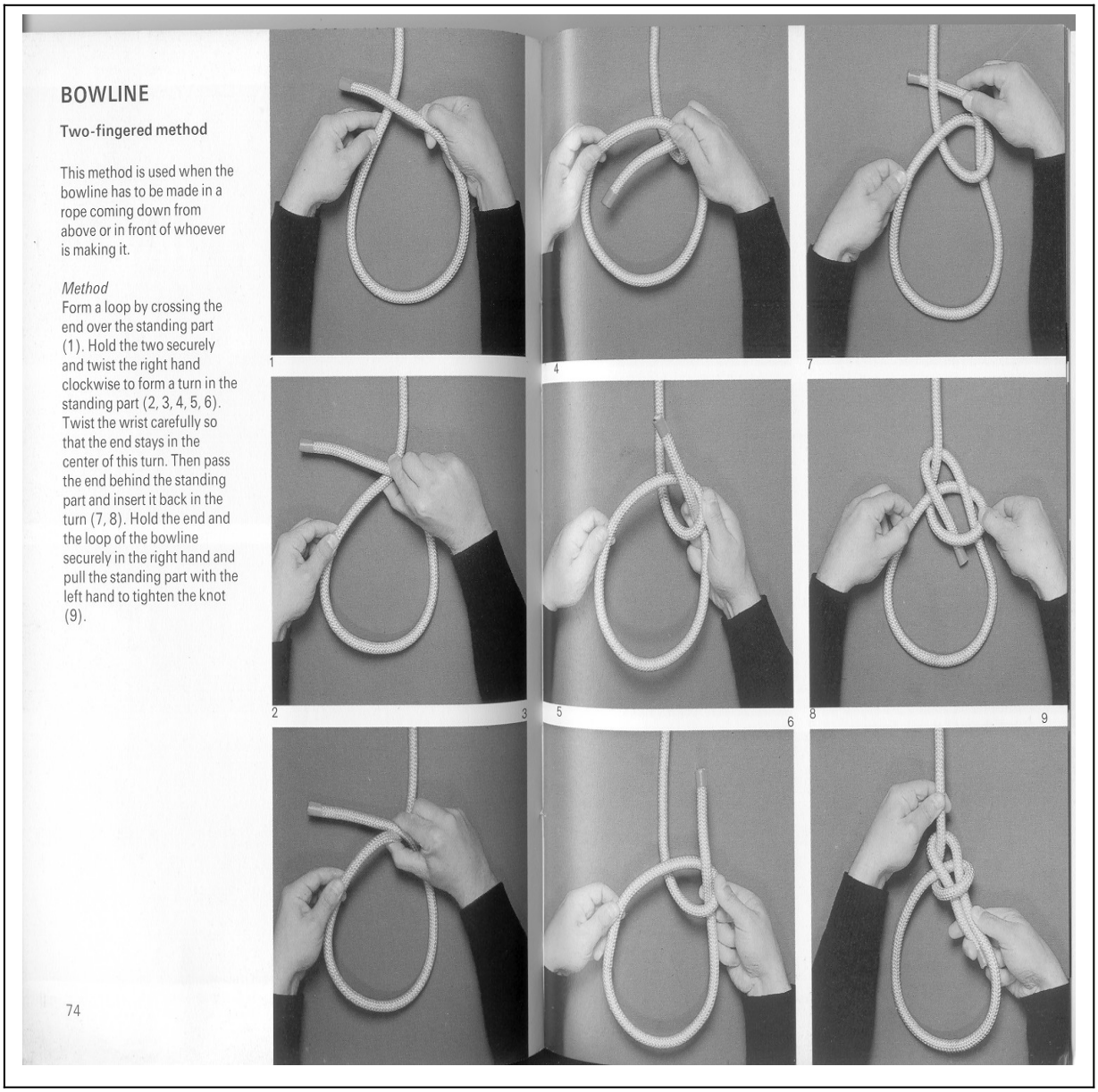
Note: The smaller rope passes around the shorter end of the bight before passing behind it..

Note: The smaller rope does not pass through the bight of the larger rope..

The Bowline

Purpose:
The bowline forms a permanent loop that does not reduce in size with increasing strain. It is commonly used to attaché a cord to a pack frame, secure tarps and tents, secure a line to a canoe and in rescue situations.

Picture:


BOWLINE
Two-fingered method
This method is used when the bowline has to be made in a rope coming down from above or in front of whoever is making it.
Method
Form a loop by crossing the end over the standing part (1). Hold the two securely and twist the right hand clockwise to form a turn in the standing part (2, 3, 4, 5, 6). Twist the wrist carefully so that the end stays in the center of this turn. Then pass the end behind the standing part and insert it back in the turn (7, 8). Hold the end and the loop of the bowline securely in the right hand and pull the standing part with the left hand to tighten the knot (9).
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1
2
3
4
5
6
7
8
9

Note: This is an important knot. Be sure you can tie it correctly.